IS 4603 (1991): Phenyl Ethyl Alcohol [PCD 18: Natural and Synthetic Fragrance Materials]

BLANK PAGE

भारतीय मानक

फिनाइल ईथाइल एल्कोहल – विशिष्टि

(पहला पुनरीक्षण)

Indian Standard

PHENYL ETHYL ALCOHOL — SPECIFICATION

(First Revision)

UDC 661·722

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

October 1991

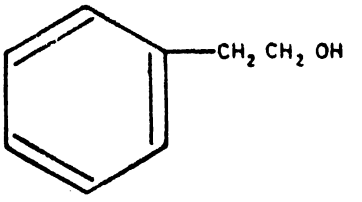
Price Group 2

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Natural and Synthetic Perfumery Materials Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

This standard was first published in 1968. In this revision GLC method of analysis for determination of alcohol content has been prescribed as the main method of test in place of wet method. Requirement for solubility in water has been modified. Other necessary changes to suit the material currently being manufactured and sold in the country, have also been included.

Phenyl ethyl alcohol occurs in essential oils distilled from numerous flowers, such as those of rose, neroli, *champaca* and geranium. It can be called the universal perfume material as it finds its way into almost every floral bouquet. It is particularly valuable in compounding bouquets of lily, lilac, jasmine or orange blossom character and it may be said that no rose perfume is ever formulated without it. It is also extensively used in a variety of other perfumes and flavours. It is represented by the following structural formula:



β — Phenyl Ethyl Alcohol
(Molecular mass 122.17)

In preparation of this standard, considerable assistance has been derived from the Givaudan Index (Second Edition) 1961 Givaudan Lelawanna Inc, New York; and EOA No. 20 Standard for phenyl ethyl alcohol (revised 57), Essential Oil Association of USA, 1975 New York.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*).' The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

AMENDMENT NO. 1 MAY 2005
TO
IS 4603 : 1991 PHENYL ETHYL ALCOHOL— SPECIFICATION

(First Revision)

[*Page* 2, *Table* 1, *Sl No.* (vi), *col* 3] — Substitute '99' *for* '98'.

(PCD 18)

Reprography Unit, BIS, New Delhi, India

Indian Standard

PHENYL ETHYL ALCOHOL—SPECIFICATION

(First Revision)

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for phenyl ethyl alcohol.

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard:

IS No.	*Title*
326	Methods of sampling and test for natural and synthetic perfumery materials:
(Part 1) : 1984	Sampling (*second revision*)
(Part 2) : 1980	Preliminary examination of perfumery materials and samples (*second revision*)
(Part 3) : 1980	Relative density (*second revision*)
(Part 5) : 1986	Determination of refractive index (*second revision*)
(Part 6) : 1986	Determination of solubility (*second revision*)
1070 : 1977	Specification for water for general laboratory use (*second revision*)
2284 : 1988	Methods for olfactory assessment of natural and synthetic perfumery materials (*first revision*)
6597 : 1988	Glossary of terms relating to natural and synthetic perfumery materials (*first revision*)

4 TERMINOLOGY

For the purpose of this standard, definition given in IS 6597 : 1988 shall apply.

4 REQUIREMENTS

4.1 Description

The material shall be a synthetic product. It shall be a colourless liquid, free from sediments, suspended matter and adulterants.

4.2 Solubility

4.2.1 *In Alcohol*

The material shall be clearly soluble in 2 volumes of aqueous ethyl alcohol, 50 percent (v/v) when tested as prescribed in IS 326 (Part 6) : 1986.

4.2.2 *In Water*

The material shall pass the test when tested as prescribed in Annex A.

4.2.2.1 The material shall not reveal any off-odour when tested as below.

In a clean odour — free beaker (about 150 ml capacity) take 50 ml of distilled water (odour free). Add 5 drops of test sample (approx. 0·15 g) of phenyl ethyl alcohol dropwise using a capillary tube of internal diameter about 3 mm. After leaving it undisturbed for 3 minutes the surface of water layer is assessed for any objectionable by-odours. Absence of by-odours like harsh green, chlorine and acid-burnt indicates absence of minute quantities of contaminants in phenyl ethyl alcohol.

4.3 The material shall also comply with the requirements given in Table 1.

5 PACKING AND MARKING

5.1 Packing

The material shall be supplied in glass bottles or tin lacquer-lined containers permitting a minimum of air space as agreed to between the purchaser and the supplier. Aluminium and galvanized iron containers are not recommended. The material shall be protected from light and stored in a cool and dry place.

5.2 Marking

Each container so filled shall bear legibly and indelibly the following information:

a) Name of the material;
b) Indication of the source of manufacture;
c) Batch number and date of manufacture; and
d) Net and gross mass,

Table 1 Requirements for Phenyl Ethyl Alcohol

(*Clause* 4.3)

Sl No.	Characteristic	Requirement	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Colour and appearance	Colourless liquid	IS 326 (Part 2) : 1980
ii)	Odour and taste	Rose like, sharp and burning taste	IS 2284 : 1988
iii)	Refractive index at 27°C	1·526 6 to 1·527 2	IS 326 (Part 5) : 1986
iv)	Relative density at 27°C	1·012 to 1·015	IS 326 (Part 3) : 1980
v)	Freedom from chlorinated compounds	To pass the test	Annex B
vi)	Alcohol content, percent by mass, *Min*	98	Annex C

NOTES

1 The correction factor for relative density for each degree centigrade change in temperature is 0·000 63.

2 The correction factor for refractive index for each degree centigrade change in temperature is 0·000 41.

5.2.1 The containers may also be marked with the Standard Mark.

6 SAMPLING

6.1 Representative samples of the material shall be drawn as prescribed in IS 326 (Part 1) : 1984.

6.2 Number of tests

Tests for the determination of all the characteristics shall be conducted on the composite sample.

6.3 Criteria for Conformity

The lot shall be considered as conforming to the specification if the composite sample satisfies all the requirements specified in this standard.

7 TEST METHOD

7.1 Test shall be conducted as prescribed in **4.1, 4.2** and in col 4 of Table 1.

7.2 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070 : 1977), shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

ANNEX A

(*Clause* 4.2.2)

DETERMINATION OF SOLUBILITY IN WATER

A-0 GENERAL

A-0.1 Outline of the Method

The material is shaken with water and the resulting turbidity, if any, is compared with a standard test solution prepared from sulphuric acid and barium chloride.

A-1 REAGENTS

A-1.1 Barium Chloride Solution

Dissolve 12 g of solid barium chloride ($BaCl_2 . 2H_2O$) in sufficient water to make 100 ml.

A-1.2 Dilute Sulphuric Acid — 0·1 N.

A-1.3 Standard Test Solution for Turbidity

Prepare from 100 ml of water. Add one drop of hydrochloric acid. 2 ml of barium chloride solution (**A-1.1**) and 0·2 ml of dilute sulphuric acid (**A-1.2**) with shaking.

A-2 PROCEDURE

A-2.1 Transfer 2·0 ml of the material into a glass stoppered 100-ml graduated cylinder, fill to mark with water and shake at least for 15 seconds. After the air bubbles have risen, the solution shall be free from oil droplets. It shall be compared for turbidity with the standard test solution.

A-2.1.1 The material shall be deemed to have passed the test if it is no more turbid than the test solution when compared visually.

ANNEX B

[*Table* 1, *Item* (v)]

TEST FOR FREEDOM FROM CHLORINATED COMPOUNDS

B-0 GENERAL

B-0.1 Outline of the Method

Absence of even a transient green colour, when the material is ignited on a copper gauze in a non-luminous flame is used for determining freedom from chlorinated compounds.

B-1 APPARATUS

B-1.1 Copper Wire

Bent at one end to which a strip of 850 micron copper gauze 1·5 cm wide and 5 cm long is attached.

B-1.2 Dropper

B-1.3 Bunsen Burner

Capable of giving good non-luminous flame.

B-2 PROCEDURE

B-2.1 Place the copper strip in the non-luminous flame of the Bunsen burner until it glows without imparting a green colour. Cool the gauze and repeatedly ignite it until an oxide coating has formed. Cool the gauze and add 2 drops of the sample by means of a dropper, permitting it to burn in the air. Again cool and add 2 more drops of the test material and burn as before. Continue the procedure until 6 drops have been ignited. Hold the gauze in the outer edge of the non-luminous flame whose height has been adjusted to about 4 cm. The flame shall be free of even a transient green colour.

ANNEX C

[*Table* 1, *Item* (vi)]

GAS CHROMATOGRAPHIC ANALYSIS OF PHENYL ETHYL ALCOHOL

C-0 GENERAL

C-0.1 The chromatographic conditions given here are for guidance only.

C-0.2 Outline of the Method

A sample of the material is dissolved in a suitable solvent (for example, cyclohexane and or petroleum ether) and is injected into the gas chromatograph when it is carried by the carrier gas from one end of the column to the other. During its movement, the constituents of the sample undergo distribution at different rates and ultimately get separated from one another. The separated constituents emerge from the end of the column one after another and are detected by suitable means whose response is related to the amount of a specific component leaving the column.

C-1 APPARATUS

C-1.1 Any gas chromatograph capable of being operated under conditions suitable for resolving the individual constituents into distinct peaks may be used. The typical chromatogram for phenyl ethyl alcohol using a chromatograph with the following chromatographic conditions is shown in Fig. 1:

Sample	: Phenyl Ethyl Alcohol
Column	
Material	: Stainless steel
Length	: 3·05 m
CD	: 0·32 cm
ID	: 0·20 cm
Stationary phase	: Carbowax, 10 percent by mass
Solid support	: Chromosorb WAW 60 to 80 mesh
Carrier Gas	: Nitrogen
Conditions	
Column temperature, isothermal	: 190°C
Injection port temperature	: 250°C
Detector	
Type	: F.I.D.
Temperature	: 250°C

C-2 CALCULATION

C-2.1 Area Measurement (*see* Note)

Since normal peaks approximate a triangle, the area is measured by multiplying the peak height with width of half-height. The normal peak base is not taken since large deviations may be observed due to tailing or adsorption. This technique is rapid, simple and fairly accurate when peaks are symmetrical and of reasonable width.

NOTE — Other methods of are a measurement, namely triangulation, disc integrator and electronic digital integrator, if fixed with GLC machine, would be of great advantage.

C-2.2 Area Normalization (*see* Note)

By normalizing, it is meant, calculating the percentage composition by measuring the area of each and dividing the individual areas by total area, for example

$$\text{Percentage of A} = \frac{\text{Area of A}}{\text{Total area}} \times 100$$

NOTE — Internal standardization can be used if pure appropriate internal standard is available. This method is known as relative or indirect calibration.

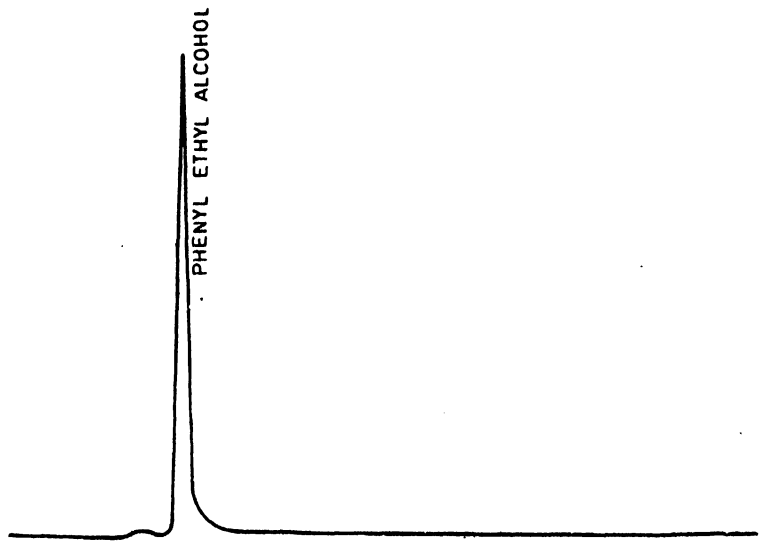


FIG. 1 TYPICAL CHROMATOGRAM OF PHENYL ETHYL ALCOHOL

Standard Mark

The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act, 1986* to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Revision of Indian Standards

Indian Standards are reviewed periodically and revised, when necessary and amendments, if any, are issued from time to time. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition. Comments on this Indian Standard may be sent to BIS giving the following reference:

Doc : No. PCD 18 (1055)

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters :

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones : 331 01 31, 331 13 75

Telegrams : Manaksanstha
(Common to all Offices)

Regional Offices :	Telephone
Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	{311 01 31 {331 13 75
Eastern : 1/14 C. I. T. Scheme VII M, V. I. P. Road, Maniktola CALCUTTA 700054	37 86 62
Northern : SCO 445-446, Sector 35-C, CHANDIGARH 160036	53 38 43
Southern : C. I. T. Campus, IV Cross Road, MADRAS 600113	235 02 16
Western : Manakalaya, E9 MIDC, Marol, Andheri (East) BOMBAY 400093	6 32 92 95

Branches : AHMADABAD, BANGALORE, BHOPAL, BHUBANESHWAR, COIMBATORE, FARIDABAD, GHAZIABAD, GUWAHATI, HYDERABAD, JAIPUR, KANPUR, PATNA, THIRUVANANTHAPURAM.

Printed at Printwell Printers, Aligarh, India